IMPROVED ASSEMBLED SHELF

RELATED U.S. APPLICATIONS

Not applicable.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not applicable.

REFERENCE TO MICROFICHE APPENDIX

Not applicable.

FIELD OF THE INVENTION

[0001] The present invention relates generally to a structure of assembled shelf, and more particularly to a structure of an assembled shelf that has a vertical groove and bar to position the shelf and vertical side rack.

BACKGROUND OF THE INVENTION

[0002] Whether it is in a home or business place, an assembled shelf has importance, and through the deliberate efforts in the industry, it now has diversified structures. The current shelf can be divided into a one-piece structure and assembled structure. The main part of the one-piece structure is fixed; therefore, it cannot be taken apart. The main part of the assembled structure is made of the separated components (such as the shelf and side racks). Therefore, it can be taken apart and restored to its separated state. Currently, the assembled shelf is widely accepted by the consumer because of its flexibility. However, the current assembled structure still has the following issues:

1. The components of the current shelf must rely on some hardware (such as screws, nuts) to be positioned; therefore, it must have a tool to achieve the assembling or disassembling. Because the parts of the shelf that need hardware exceeds ten places, it is time consuming.

2. Moreover, if the shelf needs added structure, it must have multiple shelves or stack them on top of each other. Because there is no common structure between them, it lacks a stable connection, and the cost is high as well.

3. The weight limitation is limited when the shelf is being used, and the shelf is unable to take objects that are too heavy. The common solution is to place a board or iron board between the boards or bars to achieve the objective; however, such a solution affects the entire look of the shelf.

4. Most of the time, the conventional shelf places a layer board on the frame and is unable to secure the layer board, so that layer board sometime flips, when it is under the outside force, lacking of stability.

[0003] Thus, to overcome the aforementioned problems of the prior art, it would be an advancement in the art to provide an improved structure that can significantly improve the efficacy.

[0004] To this end, the inventor has provided the present invention of practicability after deliberate design and evaluation based on years of experience in the production, development and design of related products.

BRIEF SUMMARY OF THE INVENTION

[0005] The improved fact of the present invention is described as follows:

1. It is applied so that the shelf and vertical side rack do not need other positioning components to achieve positioning, making the present invention more effective and practical.

2. The secondary bar provides the common vertical side rack commonly used by the shelf, greatly reducing the cost for shelf and being economical.

3. The reinforced stand is placed between the ⊂ shaped bars are to support the strengthen layer board, so that the shelf may hold heavier objects, increasing the practicality.

4. The reinforced stand is assembled, so that the users can add parts.

5. Using the design of the insert groove formed by a bent slab to place the groove over the two sides of the shelf plank, the layer board cannot be lifted, which makes it more stable and beautiful. The bottom of the insert groove protrudes inside more than the top. One end may be inserted into the insert groove on the one side, and the other end may be inserted into the insert groove on the other side, making the assembly more convenient.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0006] FIG. 1 shows an exploded perspective view of a shelf of the first embodiment.

[0007] FIG. 2 shows a separated perspective view of the shelf and vertical side of the first embodiment.

[0008] FIG. 3 shows a front elevation view of the extension of the structure of the first embodiment.

[0009] FIG. 4 shows a partial enlarged perspective view of FIG. 3.

[0010] FIG. 5 shows a perspective view of another extension of the first embodiment.

[0011] FIG. 6 shows an assembled perspective view of the second embodiment.

[0012] FIG. 7 shows a partial enlarged perspective view of FIG. 6.

[0013] FIG. 8 shows a perspective view of an extension of the second embodiment.

[0014] FIG. 9 shows a partial enlarged perspective view of FIG. 8.

[0015] FIG. 10 shows an exploded perspective view of the reinforced stand placed inside the shelf.

[0016] FIG. 11 shows a lateral sectional view of the reinforced stand inside the shelf.

[0017] FIG. 12 shows a frontal sectional view of the reinforced support inside the shelf.

[0018] FIG. 13 shows an assembled perspective view of the shelf.

[0019] FIG. 14 shows a perspective and sectional view of the bent slab inside the shelf.

[0020] FIG. 15 shows a side elevation view of the bent slab inside the shelf.

[0021] FIG. 16 shows a front elevation view of the assembling of the shelf plank as shown in FIGS. 13-15.

[0022] FIG.17 show an exploded perspective view of the alternatives to the shelf plank as shown in FIGS. 13-15.

DETAILED DESCRIPTION OF THE INVENTION

[0023] The features and the advantages of the present invention will be more readily understood upon a thoughtful deliberation of the following detailed description of a preferred embodiment of the present invention with reference to the accompanying drawings.

[0024] As shown in FIGS. 1-3, there is the first embodiment of the improved structure of assembled shelf. The main frame comprises two vertical side racks 10 and several sets of shelves 20. A shelf is placed between the two vertical side racks 10, and the fixed frame (connected by welding) is the vertical side rack made by a vertical bar 30 and horizontal bar 40. The horizontal bar 40 is placed on the pre-determined height of the shelf 20 for the shelf 20.

[0025] A vertical bar 30 of the vertical side rack 10 includes a main bar 31 and an inner/outer secondary bar 32 33. The inner/outer secondary bar is placed inside and outside of the main bar 31, and the main bar 31 is spaced between the inner/outer secondary bar 32 33. The space is positioned and formed by the horizontal bar 40.

[0026] The sides of the shelf that are corresponding to the vertical side rack has a frame 50, and a vertical groove 51 is placed between two ends of the frame. The position of the groove is connected with the inner second bar 32 of the vertical side rack 10 mentioned above, and the surface 52 of the frame is pushed against the side of the main bar 31.

[0027] Through the above structure and design, the shelf 20 and the two vertical side racks 10 do not need other positioning components and assisting tools to achieve positioning. Moreover, the outer secondary bar 33 provides extendable vertical side racks for the shelf as shown in FIG. 3 and 4. When the present invention extends to another set of shelves, it can just place another set of vertical side racks 10B between the space of one side of a vertical side rack 10 of the original side rack. Another shelf 20B is placed between that vertical side rack 10B and the original vertical side rack 10, using the connection between the groove 51 of the frame 50 and the inner secondary bar 32 inside the vertical side rack 10 to assemble the extension of the shelf. As shown in FIG. 5, there is a structure using the above mentioned principles to assemble a triple shelf.

[0028] As shown in FIGS. 6, 7, there is the second embodiment of the improved structure of an assembled shelf. The features of the shelf comprise two vertical side racks 10 and several shelves 20, being the same as the first embodiment mentioned above. Therefore, it is not repeated herein.

[0029] The difference is that a vertical bar 30 of the vertical side rack 10 includes a main bar 31 and a secondary bar 31B. The main and secondary bar are placed in parallel and spaced in between, the space being formed by the horizontal bar 40.

[0030] The sides of the shelf 20 that are corresponding to the vertical side rack 10 have a frame 50. A vertical groove 51 is placed between two ends of the frame, and the position of the groove is connected with the main and secondary bar 31 31B mentioned above.

[0031] Through the above structure and design, the shelf 20 and the two vertical side racks 10 do not need other positioning components and assisting tools to achieve the positioning. Moreover, the secondary bar 31B provides an extendable vertical side rack for the shelf as shown in FIG. 8 and 9. When the present invention extends into another set of shelves, it can just place another set of vertical side racks 10B between the space of one side of a vertical side rack 10 of the original side rack. Another shelf 20B is then placed between that vertical side rack 10B and the original vertical side rack 10, using the connection between the groove 51 of the frame 50 and the secondary bar 31B inside the vertical side rack 10 to assemble the extension of the shelf for quick assembly.

[0032] On the other hand, with regard to taking apart the above mentioned structure, the shelf 20 and its vertical side racks 10 may be disassembled into its independent components. When taking it apart, one end of the shelf 20 that has frame 50 is picked up, which makes the groove 51 separate from the inner secondary bar 32. All shelves 20 may be collapsed according to this operational procedure, so it is not repeated.

[0033] The main bar 31 and the secondary bars 31B, 32, 33 of the vertical side rack 10 can be circular bars. The sectional surface of the groove 51 of the frame is semi-circular.

[0034] Among them, the application for the above mentioned embodiments is that the vertical section of the frame 50 by both sides of the shelf 20 can have a $\subset$ shape. Also, a reinforced stand 60 may be placed between the frame 50 on both sides, as shown in FIG. 10, 11, 12. The reinforced stand has a long board with predetermined width, and the top end of its short end extends as a horizontal surface. The reinforced stand 60 extends a bent section 62 on both ends along the long end, so that the reinforced stand may stand from the short end. Thus, the $\subset$ shaped frame on both sides of the shelf opens shelf plank 53, forming a frame space A between the bottom of the shelf plank to the

bottom of the frame 50. The frame space is for the bent section 62 of the reinforced stand 60 to insert, so that the reinforced stand 60 is placed between the frame on both sides. The top horizontal support 61 at the top side of the reinforced stand 60 supports the bottom of the layer board. By so doing, it forms a reinforced structure, so that the shelf plank 53 can handle greater weight.

[0035] Among them, as shown in FIG. 13, 14, 15, the frame 50 on two sides of the shelf 20 may have a bent slab 70. The top and bottom of the bent slab can be a horizontal slab 71, and a vertical slab 72 is connected between the top and bottom to make the section of the bent slab 70 like a step. The top of the frame 50 on two sides of the shelf 20 form a bent edge 54, and the horizontal slab 71 of the top end of the bent slab 70 is connected to the bottom of the bent edge 54.

[0036] By so doing, a ⊂ shaped insert groove 55 is formed at the bottom of the bent edge 54, and the end of the horizontal slab 71 at the bottom of the bent slab 70 sticks out at the end of the bent edge 54. The insert groove 55 may be placed on both corresponding sides of the bent slab 70, so that the shelf plank 21 can be assembled. Therefore, the shelf can be assembled as different styles of shelf planks (as shown in FIG. 17) to make the product more plentiful. The bottom of the insert groove 55 protrudes inner more than top end, when it is assembling the shelf plank 21, as shown in FIG. 16. After one end is inserted into the insert groove at a tilted angle, inserting another side of shelf plank into the insert groove on the other side is more effective.